

IOT-ENABLED SMART POULTRY FARMING

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ABSTRACT -Automation is becoming more important in modern society. This study investigates how wireless sensor networks and mobile communication technology can automate chicken farms. The most commonly used bird species is chicken due to its greater protein, lower cholesterol, and lower fat content. This study focuses on monitoring and managing temperature, humidity, and ammonia gas levels in poultry farms to optimize chicken health and growth. Water level is monitored and adjusted by the sensor. Each sensor module can be connected to the microcontroller to compile readings. Next, a WiFi gadget sends data to an internet platform. The poultry plant administrator might manage farm operations via a PC or mobile device with internet access. This DC motor, cooling fan, and exhaust fan system automatically regulates water level, temperature, humidity, and ammonia gas percentage. No one must perform. When threshold values are met, devices activate. Automating poultry and reducing labor-intensive tasks helps this system to produce healthy poultry.

Keywords: PIC microcontroller, Wireless Sensor Network, IoT.

I. INTRODUCTION

Over the past few decades, there has been a global increase in awareness of food safety concerns and a desire for more nutritious meals. As a result, numerous nations have implemented legislation to facilitate the transition of producers from manual farming to the use of machinery. This method significantly influences the growth of fowl in contemporary poultry farms. The primary focus of this research is the development of novel tools that are being implemented in poultry farms to regulate factors that influence growth, including temperature, humidity, and ammonia gas. Chickens may experience issues with their behavior, intestines, or lungs if they are not provided with the appropriate environmental conditions. By providing sufficient water and appropriate conditions, hens will experience an

increase in growth and an improvement in their overall health, which will ultimately result in weight gain. The rate and quality of chicken growth are significantly influenced by the weather. Exhaust, cooling, and air fans are implemented by an intelligent poultry farm to regulate humidity and temperature. The Arduino computer monitors the temperature, humidity, ammonia gas, and water level and regulates them. An individual in control may have the ability to observe the interior of a chicken farm using a smart phone or PC that is connected to the internet. This is feasible when monitor data is published on a website.

II. LITERATURE SURVEY

The technology facilitates the farmer's monitoring of the poultry farm's operations. The equipment simplifies

poultry operations and monitors them by integrating wireless devices into a portable system. The temperature, the amount of light, the level of ammonia gas, and other natural factors are continuously monitored and adjusted. The internet facilitates communication between individuals and organizations by connecting devices. It has the potential to reduce your workload, expenses, and time.

Rather than manually placing food into receptacles, this method saves a significant amount of time and effort. The poultry enterprise is able to address issues concerning its employees as a result of the resolution. It is composed of two primary components: a sensor that monitors the temperature of the food to ensure that it remains fresh for the hens and a machine that mechanically transfers the food to the appropriate containers. It ensures that the poultry are fed on time, maintains the freshness of the food, reduces the cost of labor, and prevents insects from entering the food.

The chicken farm employs computer programs and networking. A movable sensor network system is being constructed to monitor and regulate the temperature and humidity in a poultry farm in order to conduct this investigation. Businesses can accomplish more with fewer employees by utilizing computer networks. It transforms into a system that can be automated. The ecological equilibrium is disrupted by the use of an automatic method to enhance the quality of the meat.

The chicken control system employs hardware and instruments that are available for free. It also evaluates the purity of the air, lighting, humidity, and temperature. The system's primary

objectives are to provide open source software, low-cost technology, and a framework for the Internet of Things. The chicken enterprise is experiencing a variety of issues, as identified by the system. It enhances the environment, reduces the cost of labor, and saves time. It also increases the productivity of poultry.

The primary objective of this research project is to monitor and regulate the poultry' environment through the use of a wireless sensor GPRS network, while simultaneously taking appropriate measures. This technology enables individuals to monitor and regulate the temperature of a poultry farm. Additionally, it facilitates the provision of nutritious sustenance to the chicks. This strategy reduces labor expenses and work hours. It also monitors critical natural factors, including temperature, humidity, water level, and ammonia emissions, to ensure the ecosystem's continued existence.

The primary objective of the investigation is to automate poultry farms by utilizing mobile communication technology and wireless sensor networks. In addition, this investigation investigates elements that are capable of self-regulation and self-monitoring, including temperature, humidity, and ammonia gas. The quality and efficiency of livestock production are enhanced as a result of this technology. The chicks' health is the sole concern of the intelligent poultry farm, which is dedicated to maintaining the optimal temperature. Machines are employed to regulate the temperature at the chicken facility.

III. PROBLEM STATEMENT

Setting Establishing an IoT (Internet of Things) network to facilitate the construction of a sophisticated poultry farm. The poultry are not the only thing that the system feeds. It modifies the temperature to activate a water spray and utilizes the moisture in the soil to prevent the birds from emitting an excessive amount of hazardous gases. The poultry farm's temperature and humidity are monitored by an automated device.

IV. METHODOLOGY

The block map of the proposal is depicted in the image, which organizes the various components of the system.

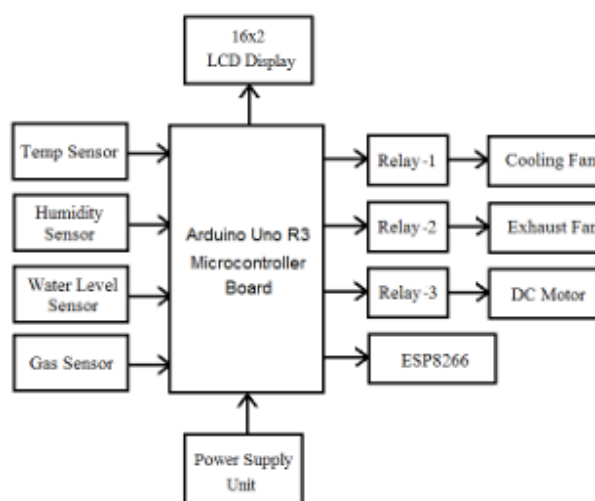


Figure 1: Block Diagram

The Atmega 328 was the most critical component of the undertaking. The DHT 11 monitor is responsible for determining the temperature and humidity of the environment. The quantity of water in a reservoir is indicated by a water level indicator. A gas monitor is capable of detecting and identifying a specific gas. When a relay is activated or deactivated, it functions as a binary switch. If the temperature exceeds the designated threshold, the cooling fan will activate. The water pump will commence operation

immediately upon the water level decreasing, as the DC motor is activated. When an odor or gas is detected, the discharge fan commences operation. Each item on this list is transmitted to the Internet of Things using the ESP8266.

V. CONCLUSION

The Internet of Things (IoT) is a novel and innovative technology that has the potential to transform a conventional farm that is manually operated into a modern farm that is partially automated. It is employed to provide for the welfare of birds. The technology could be integrated into an Android application that enables the user to monitor various aspects of the poultry farm, including the feeding of the chickens, the identification of objects, the regulation of sprinklers, and the elimination of hazardous gases. The proposed technology can autonomously feed the hens, eliminate unpleasant odors, and maintain the appropriate temperature on the farm with minimal effort. This approach will reduce environmental pollution and conserve resources such as time, money, and labor.

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